CLAIMS

What is claimed is:

1. A method of generating contour lines from row and column data, the method comprising the steps of:

a) selecting a first data point from the row and column data comprising a first state;

b) comparing a second data point with the first state;

c) determining an existence of a contour line;

d) updating the first state to a next state, if the contour line exists;

e) creating a portion of a contour line image, if the contour line exists;

f) proceeding to a next data point; and

g) repeating steps b) through g) for a next column or row.

2. The method of claim 1 wherein the step of proceeding comprises proceeding in a predetermined direction.

3. The invention of claim 2 wherein the step of proceeding in a predetermined direction comprises proceeding in predetermined row and column directions.

4. The method of claim 1 further comprising the step of selecting a contour line interval.

5. The method of claim 1 further comprising anti-aliasing the contour line image.

6. The method of claim 1 wherein the step of updating comprises determining if an elevation point row and column data exceeds a current row or column base elevation by a value greater than a contour interval.

7. The method of wherein the step of updating comprises storing the next state in a memory.

8. The method of claim 7 wherein the step of storing comprises storing the row and column base elevation.

9. The method of claim 1 wherein the step of creating comprises drawing the portion of the contour line image.

10. The method of claim 9 wherein the step of drawing comprises displaying the portion of the contour line image.

11. The method of claim 1 wherein the state of creating and the step of repeating comprises creating an entire contour line image.

12. A method of transforming input elevation data into a real-time contour plot image, the method comprising the steps of:

a) selecting an ordering sequence;

b) selecting a contour line interval;

c) determining initial row and column base elevation values;

d) selecting a first data point;

e) determining whether a contour line point has been detected by comparing the row base elevation value or column base elevation value plus the contour interval to the elevation data;

f) drawing a portion of a contour plot image;

g) updating the row and column elevation values to a highest contour interval multiple less than a elevation data point;

h) moving to a next data point; and

i) repeating steps e) through h).

13. The method of claim 12 wherein the step of determining initial row and column base elevation values comprises selecting a contour elevation closest to but not exceeding the first elevation value in the row.

14. The method of claim 12 wherein the step of drawing and the step of repeating comprises drawing an entire contour line image.

15. An apparatus for generating contour lines from row and column data, the apparatus comprising:

a first data point from the row and column data comprising a first state;

a means for comparing a second data point with the first state;

a means for determining an existence of a contour line;

a means for updating the first state to a next state, if the contour line exists;

a means for creating a portion of a contour line image, if the contour line exists;

a next data point for comparing with the next state by the means for comparing; and

a means for drawing an entire contour line image from a plurality of portions of contour line images created by the means for creating.

16. The apparatus of claim 15 wherein said means for creating comprises a display.

17. The apparatus of claim 15 further comprising memory for storing the next state.

18. The apparatus of claim 15 further comprising a means for anti-aliasing the entire contour line image.